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(54) A composite filter and a container provided with such filter

(57) A composite filter (13), more particularly for an electric kettle (10), comprises a filter cloth (14) adapted to retain particles contained in a liquid (20).

It comprises a second filter cloth (14'), a space (17') between the first and second filter cloths (14, 14') being adapted to contain a treatment substance (15) for the liquid (20).

Of use more particularly to eliminate unpleasant tastes in water.

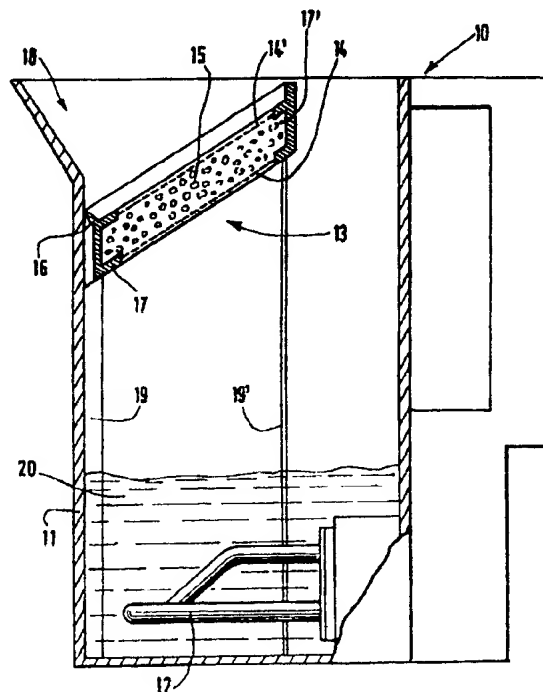


FIG.1

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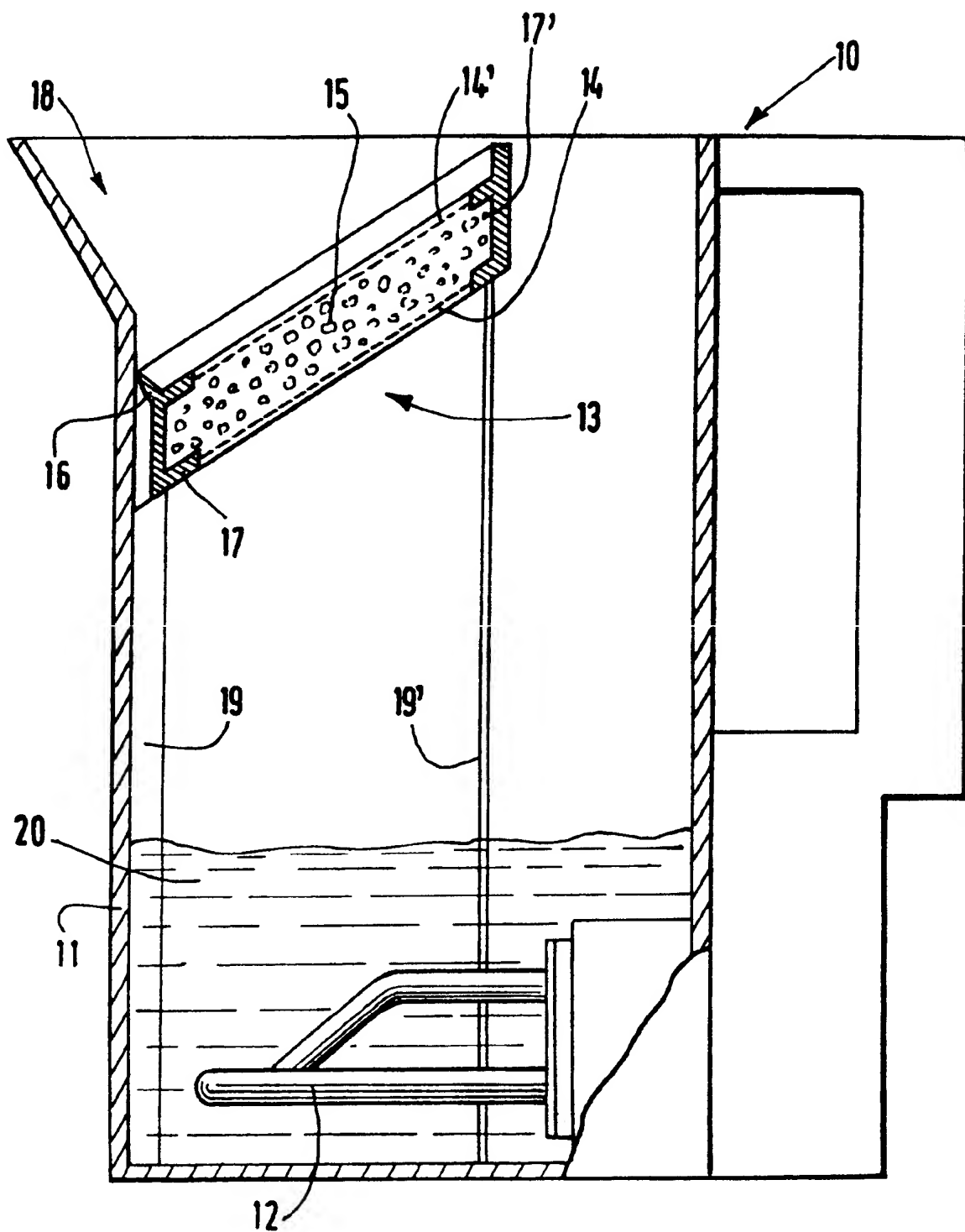
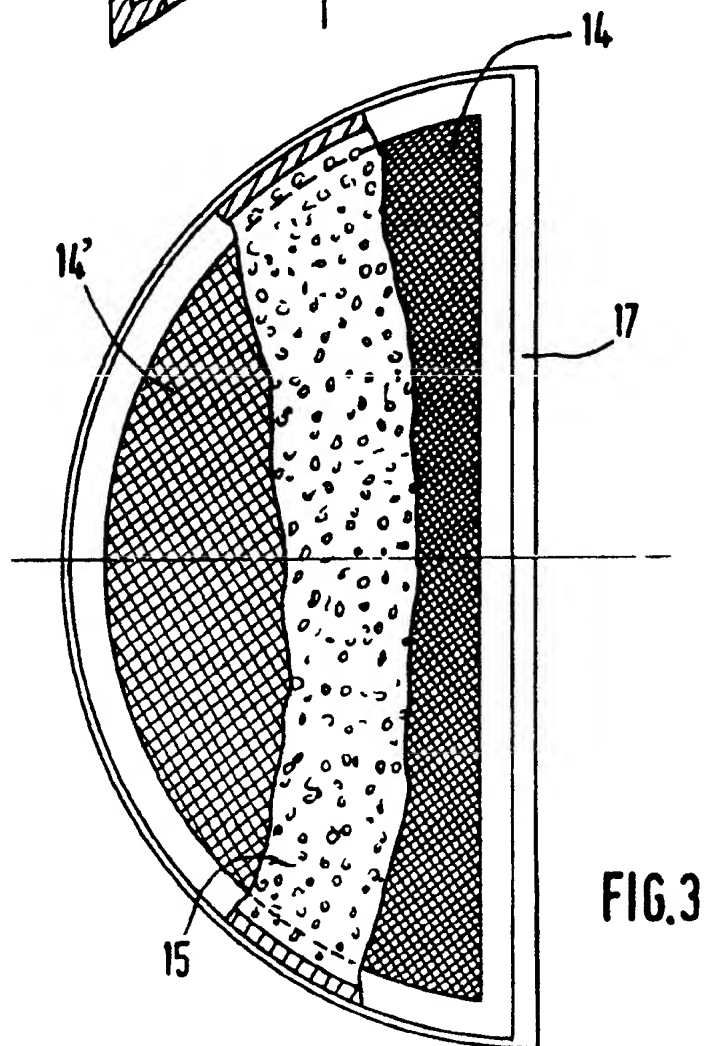
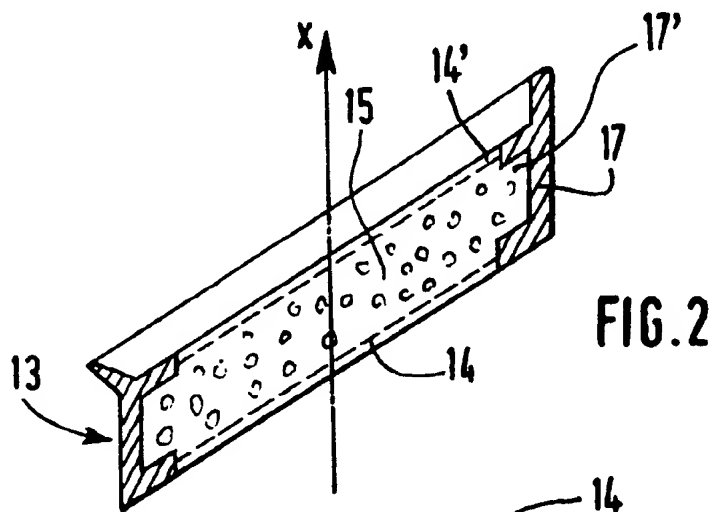


FIG.1

2/2



"A composite filter and a container provided with such filter"

This invention relates to a composite filter, more particularly for an electric kettle.

It also relates to a container provided with such a filter.

It is known to interpose in the passage of a liquid, when the latter is poured from a container, a filter adapted to retain particles contained in the liquid.

A filter of this kind is described in Utility Certificate 9116037. This filter comprises a filter cloth supported by a frame and enables particles of scale to be retained, such as are frequently found in suspension in the water of an electric kettle, for example.

This mechanical filtration of the particles suspended in a liquid prevents the formation of an oily or foamy film on the surface of the liquid.

However, the known filter only enables the appearance of the liquid poured from an electric kettle, for example, to be improved.

The user frequently encounters problems in connection with unpleasant tastes in the liquid, such as tastes of chlorine or of organic origin.

The object of this invention is to provide a filter which both improves the appearance of the filtered liquid and reduces, if not eliminating, the unpleasant tastes of the liquid.

The composite filter according to the invention comprises a filter cloth adapted to retain particles contained in a liquid.

According to the invention, this composite filter comprises a second filter cloth, a space between the first and second filter cloths being adapted to contain a treatment substance for the said liquid.

Thus by the use of two filter cloths spaced apart a zone is created in the composite filter wherein a liquid treatment substance can be disposed, for example to improve the mechanical filtration or eliminate the unpleasant tastes of the liquid.

According to one advantageous version, the space between the first and second filter cloths is compartmentalised.

This gives a homogeneous distribution and good performance of the treatment substance over the entire surface of the filter.

According to a preferred version of the invention, the filter comprises a support with a recess extending along an axis along which the liquid passes, the said first and second filter cloths being fixed to the support respectively at ends of said recess.

Thus the composite filter is of very simple production, one and the same support being used both as a frame for the filter cloths and as a cavity to contain the treatment substance.

Despite the diversity of the elements making it up, the composite filter according to the invention is therefore in the form of a single compact structure which is easy to handle and place in the container, in which the filter cloths can, if required, be removable from the composite filter assembly for cleaning purposes.

According to one advantageous version of the invention, the treatment substance comprises a compound of the active carbon type adapted to reduce the tastes of organic origin and the taste and odour of chlorine.

The composite filter thus provides an improvement of both the appearance and the taste of the filtered liquid.

According to another advantageous version of the invention, the treatment substance comprises at least one ion-exchange resin.

Depending on the type of resin, the filter acts as a water softener if it acts on the cations, and/or a purifier if it acts on the anions present in the liquid after filtration.

According to another aspect of the invention, a container, such as an electric kettle for example,

comprising an outlet orifice for a liquid comprises a composite filter as described above upstream of said outlet orifice.

Thus filtration of the liquid is provided automatically when the liquid is poured from the container without the need for the user to carry out any additional operations.

Other advantages and features of the invention will be apparent from the following description.

In the accompanying drawings, which are given by way of example without limiting force:

Fig. 1 is an elevation in partial section showing a container equipped with a composite filter according to the invention.

Fig. 2 is a side view in section of the composite filter according to the invention.

Fig. 3 is a top plan view with parts of the composite filter according to the invention broken away.

An embodiment of the composite filter according to the invention is illustrated in Figs. 2 and 3.

This filter comprises a filter cloth 14 adapted to retain the particles contained in a liquid 20, such as water, for example.

In an electric kettle, the particles suspended in the water are typically due to lime precipitations initially dissolved in the water and chips of scale originating from the scaled-up electrical resistance.

The composite filter comprises a second filter cloth 14' so spaced from the first filter cloth 14 as to produce a space in which a liquid treatment substance can be housed.

As will be clearer from Fig. 3, the filter cloths 14 and 14' consist of a cloth having a different mesh so as each to provide mechanical filtration of different elements.

The filter cloth 14' disposed behind the first filter cloth as considered in the direction of passage of the liquid denoted by the axis x has preferably a wider mesh than the first filter cloth 14.

The composite filter 13 comprises a support 17 having a recess 17' extending along the axis x on which the liquid passes through the filter 13.

The first and second filter cloths 14, 14' are secured to the support 17 respectively at ends of the recess 17'.

The recess 17' thus produced inside the support 17 and closed by the filter cloths 14, 14' forms a space which can house a water treatment substance.



The support 17 has a cross-section, in a plane secantial to the axis x of the recess 17', of a shape matching a section of a container 10 containing the filter 13.

In the exemplified embodiment, the support 17 has a cross-section in the form of a semi-circle in a plane inclined to a plane perpendicular to the axis x of the recess 17'.

The support 17 therefore has the shape of a tube of semi-circular section truncated along two parallel planes forming an acute angle with the tube axis x.

As will be clearer from the following description, this specific shape of the support is adapted to the liquid outlet orifice of a container, such as a pourer spout of an electric kettle.

The support 17 has a peripheral edge 16 adapted to be in sealed contact with a container containing the composite filter 13 so as to prevent the liquid from being able to bypass the filter 13.

Thus the liquid passes through the composite filter 13 by successively passing through the filter cloth 14, the treatment substance 15 and the second filter cloth 14'.

The treatment substance 15 may comprise a compound of the active carbon type, pure or treated with silver, adapted to reduce the tastes of organic origin and the tastes and odours due to the chlorine in the liquid.

The treatment substance may also comprise, alone or in combination with the aforesaid product, an ion-exchange resin so as to modify the nature of the anions or cations of the liquid in order to soften or purify it.

The treatment substance 15 may also be a natural product, such as fine sand, to give mechanical filtration of the liquid.

As shown in Fig. 1, the composite filter is provided in a container such as an electric kettle 10. The latter comprises in known manner a heating resistance 12 immersed in the water 20 and an outlet orifice 18 for the water 20.

Upstream of the outlet orifice in the form of a pourer spout is a composite filter 13 as described previously.

On its inner walls the kettle 10 has ribs 19, 19' forming a support for the composite filter 13. The latter therefore rests on the ribs 19, 19'.

The composite filter 13 is adapted to be positioned in the kettle 10 so as not to be parallel to the surface of the water in the kettle when the latter is at rest. The support 17 is therefore inclined to the base of the kettle 10.

The peripheral edge 16, which is similar to a sealing lip, enables the entire outlet orifice 18 to be closed by the filter 13 so as compel the water 20 to pass through the filter when poured.

The composite filter 13 is mounted in the kettle 10 detachably so that the user can withdraw it to clean it or change it, more particularly when the treatment substance is no longer effective.

The filter cloths 14, 14' are also detachable from the support 17 so that they can be changed if necessary.

The materials used to make the filter cloths and the support, and the treatment substance, are adapted to be in contact with boiling water and withstand a high temperature of about 100°C.

C L A I M S

1. A composite filter, more particularly for an electric kettle (10), comprising a filter cloth (14) adapted to retain particles contained in a liquid (20), characterised in that it comprises a second filter cloth (14'), a space (17') between the first and second filter cloths (14, 14') being adapted to contain a treatment substance (15) for the said liquid (20).

2. A composite filter according to claim 1, characterised in that the said space (17') is compartmentalised.

3. A composite filter according to claim 1 or 2, characterised in that it comprises a support (17) with a recess (17') extending along an axis (x) along which the liquid (20) passes, the said first and second filter cloths (14, 14') being fixed to the support (17) respectively at ends of said recess (17').

4. A composite filter according to claim 3, characterised in that the support (17) has a cross-section, in a plane secantial to the axis (x) of the recess (17'), of a shape complementary to a section of a container (10) containing the said composite filter (13).

5. A composite filter according to claim 3 or 4, characterised in that the support (17) has a peripheral edge (16) adapted to be in sealed contact with a container (10) containing said composite filter (13).

6. A composite filter according to any one of claims 1 to 5, characterised in that the first and second filter cloths (14, 14') have different meshes.

7. A composite filter according to any one of claims 1 to 6, characterised in that the treatment substance (15) comprises a compound of the active carbon type adapted to reduce the tastes of organic origin and the taste and odour of chlorine.

8. A composite filter according to any one of claims 1 to 7, characterised in that the treatment substance (15) comprises at least one ion-exchange resin.

9. A composite filter according to any one of claims 1 to 8, characterised in that the treatment substance (15) comprises a mechanical filtration product.

10. A container, more particularly an electric kettle (10), comprising an outlet orifice (18) for a liquid (20), characterised in that it comprises a composite filter (13) according to any one of claims 1 to 9 upstream of said outlet orifice (18).

11. A container according to claim 10, characterised in that it comprises ribs (19, 19') on internal walls, such ribs forming support for the said composite filter (13).

12. A composite filter which comprises a first filter cloth a second filter cloth and a space between the first and second filter cloths, the space being adapted to contain a treatment substance for a fluid.

13. A container which comprises an outlet orifice for a fluid and a composite filter according to Claim 12.

14. A composite filter substantially as herein before described, with reference to, and as shown in, the accompanying drawings.

15. A container substantially as herein before described, with reference to, and as shown in, Figure 1 of the accompanying drawings.

16. Any novel feature or combination of features described herein.

**Relevant Technical Fields**

- (i) UK Cl (Ed.M) BID (DNRD)  
 (ii) Int Cl (Ed.5) A47J 27/21; A47J 31/14

**Databases (see below)**

- (i) UK Patent Office collections of GB, EP, WO and US patent specifications.

- (ii) ONLINE DATABASES: WPI, CLAIMS, EDOC, WPIL

Search Examiner  
 A J RUDGE

Date of completion of Search  
 17 JANUARY 1995

Documents considered relevant  
 following a search in respect of  
 Claims :-  
 1-15

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- X: Document indicating lack of novelty or of inventive step. P: Document published on or after the declared priority date but before the filing date of the present application.  
 Y: Document indicating lack of inventive step if combined with one or more other documents of the same category. E: Patent document published on or after, but with priority date earlier than, the filing date of the present application.  
 A: Document indicating technological background and/or state of the art. &: Member of the same patent family; corresponding document.

Category	Identity of document and relevant passages	Relevant to claim(s)
	NONE	

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